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# WHAT AFFECTS HOW QUICKLY A NEW JOB IS LEARNED?

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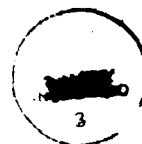
## ABSTRACT

A model of the factors that facilitate/hinder learning a new position is proposed and partially tested. While time-on-job explained 28% of the variance in the ease with which a position was learned, individual-differences, job/job-characteristics, context, and environmental factors explained an additional 22%.

## INTRODUCTION

Following the lead of academic institutions, organizations have concentrated on classroom training and education in the development of their employees' career skills and abilities. However, research (Feldman, 1988) indicates that experience accounts for over 70% of adult development. A model of experiential learning has been proposed (Morrison & Hoch, 1986) but is too macro to cover learning a single, new job. The present research corrects this omission with a new model (see Figure 1)

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which describes how individual and situational factors facilitate or hinder learning the roles required to perform new jobs.

#### THE EXPERIENTIAL JOB LEARNING MODEL

##### Individual-Difference Factors

Four categories of variables --individual-differences, job/job-characteristics, context, and environmental-- are assumed to affect the facility with which a job is learned. One subcategory of individual-difference factors, background variables, includes age, sex, education level, years of service, hierarchical level, etc.

A second subcategory, personal characteristics, includes knowledge, skill, ability, and other characteristics. Cognitive ability may be most important in learning when it is early in the learning process (Bachmann, 1985) or when learning complex tasks. Since academic and job performance are weakly correlated, abilities that are related to academic performance should not be highly related to experiential learning. Career adaptability based on self-esteem, intelligence, conscientiousness, adjustment, openness to new experiences, and certain social skills (Mumford, Reiter-Palmon, & Snell, 1990) appears to determine whether managers learn from their experiences (Bunker, 1989). Many of these characteristics increase self-efficacy (Bandura, 1989) which aids self-awareness of what needs to be learned, thereby

enhancing the learning process (London & Bassman, 1989).

Previous experience, the third subcategory, means that adult learners enter new experiences with varied histories that have created certain attitudes, values, and behaviors toward new experiences (Feldman, 1988). The range of available experiences increases with age (Howard & Bray, 1988), and unusual events appear to be crucial in enhancing or inhibiting development (Mumford et al, 1990). Early life experiences provide learning patterns or strategies (Bunker, 1989) and values or capacities that shape transactions with the environment (Mumford et al., 1990). Education and training provide knowledge and elementary skills that aid initial job learning. However, if the resulting experiences conflict with the job or context requirements, learning the job is inhibited. Prior experience in the same organization/job function is a powerful factor in learning the job in the first few months (Gabarro, 1987). Learning time in a new job should decrease as the similarity of prior work experiences increases (Hall, 1981), the time since prior experience decreases, and conflicting prior experience decreases.

#### Job/Job-Characteristics Factors

The job's significance and challenge are major factors in motivating one to learn (Brass, 1981). Because both must be perceived and translated into motivation, some will learn in a challenging situation and others will not (Bunker, 1989). Role conflict, overload, and ambiguity (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964) can create stress and inhibit job learning. Role complexity/skill variety (Hackman & Oldham, 1980) will probably increase the amount of time that it takes to learn a job (Pinder & Schdroeder, 1987). The job itself will affect learning only when its tasks represent a higher level of influential job characteristics than the jobs with which it is being compared.

#### Context (Within the Organization) Factors

Because individuals develop in constant interaction with their environments (Bandura, 1989), the impact of the context on experiential learning may be very strong (Feldman, 1989). As the organization's size increases, functions become segmented, making the intra-organizational coordination roles harder to learn. As the organization's status increases and its mission becomes more central to the purpose of the total enterprise, learning opportunities increase because resources and support may be made available. Job-learning opportunities are enhanced during mission-relevant activities and inhibited during non-mission related activities such as maintenance. Adults learn more quickly when they have reasonable time available and control their own pace (Whitbourne & Weinstock, 1979).

Leadership can enhance learning by reducing stress from a difficult, ambiguous, or conflict-laden job (Yukl, 1989). This reduction occurs via communication, a climate of cooperation (Pinder & Schroeder, 1987), and adequate finances, time, technical aid, and human resources.

#### Environmental (External to the Organization) Factors

Job learning is also affected by sociocultural changes, e.g., economic depression, wars and cultural upheaval, technological revolution, and other social events, which influence life patterns and experiences and individuals' values, perceptions, and motivation (Howard & Bray, 1988). The family via spousal support and cooperation from teen-age children enhances/inhibits learning a new position (Hall, 1991; Murphy, 1990).

Those positions that include considerable contact with external senior management, staff support, customers, the public, associations, etc., contain boundary roles that may have a high degree of role conflict and absorb large amounts of time in contact with outsiders (Hamner & Organ, 1978). This complex role increases the amount of time that it takes to learn the job.

Corporate policies and practices similarly may inhibit learning the job quickly by altering tasks; introducing job-irrelevant tasks; demanding extra reports, etc.; or limiting a learner's ability to establish a reasonable work pace.

## METHOD

### Sample

The estimated population for this research consisted of 604 middle managers (surface warfare officers) who were assigned to one of the four major department head (DH) positions in 311 different organizations (Navy ships) between August and November, 1989. The sample consisted of 292 officers whose descriptive statistics did not vary significantly from those of the population. These lieutenants (69%) and lieutenant commanders (31%) had from 2 to 15 years of supervisory experience with an average of 8.9. They supervised 50 to 85 subordinates and had received job-specific training. Seventy-seven percent were married, and 97% were male. Assuming that respondents were randomly distributed in the population, we are 97% confident that an item mean for the population will be in the interval  $\bar{Y} \pm .05\bar{Y}$  (Cochran, 1977).

Most DHs were in either the first ( $n=146$ ) or the second ( $n=104$ ) of sequential 18- to 23-month assignments in the same position but different ships. The third group ( $n=42$ ) was assigned to single jobs/ships for 30- to 32-months. Thus, the DHs had from 1 to 32 months of job experience in their present organization.

### Measures

The data (many were verifiable) were collected using a computer-administered survey that was sent to all relevant Navy ships.

Dependent Variable. The officers rated themselves on 10

independent DH roles that had been developed via comprehensive field observations and interviews. The extreme and central positions on a graphic scale for a learning curve were "knowing nothing about the role" (starting) (1), "am beginning to feel comfortable in this role" (comfortable) (4), and "feeling so capable that the role was done automatically" (7). There were three working relationship roles (subordinates, superiors, and peers), three duty roles (planning and scheduling training, supervising watches/shifts, and leadership), three task roles (administration, materiel condition, and personnel management), and a technical knowledge role. The arithmetic mean of the 10 role self-ratings represented the DH's position on the DH job learning curve. The 10 role measures were independent enough to be considered separate facets of the DH job.

**Independent Variables.** Table 1 shows the 47 variables (and coefficient alphas for scales) that were used to test Figure 1. Additional items (e.g., gender and age) were dropped because of extreme skewness, insufficient variance, and redundant content (e.g., rank and years of commissioned service). Skewness and multicollinearity were minimized. To make data collection parsimonious, constructs from the model in Figure 1 that were assumed to have little affect in this situation were not measured.

#### **Analytical Approach**

Initially, a referent model was formed by hierarchically regressing job-learning curve position on the linear, quadratic, and cubic functions of months-on-job. Next, because of the small respondent/predictor ratio, path analysis (Pedhazur, 1982) was used to develop submodels for each of the four major classes of variables. In each step, the referent model was entered first and, then, the variables assumed to have causal relationships with endogenous variables.

Using hierarchical, block inclusion, the first step in constructing the complete model was to regress (in order) learning curve position on the referent model followed by the job-characteristics, individual-differences, context, and environmental variables that had significant, direct relationships with the dependent variable in a submodel. Then, each direct causal variable was regressed on a set of variables from all submodels that were hypothesized to affect that causal variable. The significant relationships were incorporated in the final model.

## RESULTS

A curvilinear relationship in the referent model was anticipated and supported by significant beta weights for the quadratic ( $b = .55, p < .01$ ) and linear ( $b = 1.02, p = .01$ ) terms. The cubic function did not add ( $\Delta R^2 = .00, p > .05$ ) to the 28% of the variance explained by the combined linear and quadratic functions. Thus, the referent model was formed by the linear and quadratic functions for months-on-job.

### Submodels

Initially, all of the individual-differences variables except the specific work-group training programs were assumed to directly affect learning the job. The measures of self-efficacy, prior experience as a DH, and leadership training's contribution explained more variance in the dependent variable than the referent model alone ( $\Delta R^2 = .01, p = .01$ ). Self-efficacy was



explained by experience with division officer (DO) tasks that were similar to DH tasks and obtaining the DH jobs they wanted. DHs in their first DH jobs had less service and less often obtained the jobs they wanted. The DHs' assessment of their leadership training was explained by two factors: taking longer to qualify in their field and assessing their training in how to work with superiors, subordinates, and peers.

Development of the job and job-characteristics submodel assumed that all 11 job and job-characteristics measures directly affected learning the job. The job characteristics of role complexity, job challenge, and job significance (mission and administration) explained more variance in how readily the job was learned than the referent model alone ( $R^2 = .14$ ,  $p = .01$ ). No DH job entered the submodel.

Construction of the context submodel assumed that all 11 variables directly affected the time that it took to learn the job. All of the organization-climate, -pace, and -stage variables added explanation of the variance in the dependent variable beyond the referent model alone ( $R^2 = .10$ ,  $p = .01$ ). The status of the organization explained variance in the competence of both peers ( $R^2 = .04$ ,  $p = .01$ ) and subordinates ( $R^2 = .03$ ,  $p = .01$ ) while the amphibious mission helped explain the variance in the competence of subordinates ( $R^2 = .03$ ,  $p = .01$ ). Significant effects for leadership climate and the availability of funds accounted for variance in organization pace ( $R^2 = .01$ ,  $p = .01$ ).

The environmental submodel included only two variables that

were assumed to directly affect the time that it took to learn the job. Although marital status produced a significant increment ( $\Delta R^2 = .02$ ,  $p < .01$ ) in the amount of variance explained by the referent model, the percent of external contacts delegated did not add any new information. Likewise, the number of dependents did not have a direct influence on the time it took to learn the job but explained a significant amount of variance ( $\Delta R^2 = .01$ ) in the DHs' perception of the influence of marital status on learning.

#### Complete Model

Figure 2 shows the complete model. Individual differences variables appeared to have the greatest influence on learning. Immediate prior experience as a DH raised their initial position on the learning curve when they entered a new DH job. Prior DH job experience was more common for longer service officers on higher status ships. Self-efficacy and a lower impression of leadership training also enhanced learning. Self-efficacy was explained by experiencing more DO tasks that were similar to DH tasks, more often obtaining the desired job, and perceiving the job's mission as important. Perceiving leadership training as less useful was typical of officers who had obtained their occupational qualifications more quickly and saw specific work-group training as less useful. Context variables that facilitated learning the job were two organizational stages (currently in nonrepetitive or nonmaintenance activities and entering during operations), the reasonableness of the organization's pace, and having more competent subordinates. Leadership climate, adequate funds, a less difficult job, and less similarity between the present job and the most recent DO job contributed to the impression that a reasonable amount of time was available. Competent subordinates appeared to be present around high technology equipment, important administrative tasks, and non-amphibious ships. While a somewhat more boring job enhanced learning, so did an increase in the perceived significance of the job. The

impression that the job was more boring resulted from feeling that peers were less competent and the mission of the job was not too important. The major contributor to the feeling that the job's mission was important was the leadership climate supported somewhat by impressions of leadership training. The smallest contributor to learning the job was support from the spouse which increased as the number of dependents decreased and the significance of the job increased. The amount of variance in the dependent variable explained by the complete model, ( $R^2 = .00$ ) was 79% more than that explained by the referent model alone ( $R^2 = .22$ ,  $p = .00$ ).

## DISCUSSION

Many of the relationships proposed in the development of the job-learning model were supported in this research but others were not. The dependent variable was a quadratic function of time on the job rather than the cubic one that was anticipated. The primary assignment types, first and second of two sequential assignments, were relatively short, 18 months each, so learning should have been a linear or cubic function, continuing for another year or so (Gabbro, 1987). The drop in learning toward the end of the assignments may have taken place because the DHs psychologically detached themselves from their work early or their associates had shifted their attention to working with the DHs' replacements. Neither possibility was assessed.

A plot of position on the learning curve against time-on-job showed a noticeable drop in learning between the eighth and tenth months of both the first and second half of the sequential assignments. This drop appeared at the point where the DHs were negotiating with headquarters for their new assignments, a major distraction to the DHs' learning process. The effect of

reassignment negotiations is an environmental factor that should have been included in the set of measures.

Theorists and practitioners should be pleased with the indirect influence leadership had on learning the job by emphasizing the significance of the job and contributing to the establishment of a reasonable organizational pace.

The significant affect on learning the job when the job was perceived as less challenging (more boring) is controversial. The same ambivalence surrounds the feeling that leadership training actually inhibited learning the job. Although none were investigated here, several alternatives may be posed as possible explanations of these phenomena. Equity, social-learning (self-efficacy), and other theories may help provide an answer.

Prior task experiences similar to DH tasks did not make a direct contribution to learning the job more quickly. Such experience was mediated through the DHs' perceptions. It appears that DHs with higher feelings of self-efficacy felt that their abilities and previous experiences helped prepare them for their DH jobs while DHs with lower impressions of their capabilities did not.

The contribution of family support to the learning process was not surprising given all of the research in military settings linking it to career issues. It was also anticipated that the perceptions of reasonable time to do the job and work on personal development and competent subordinates would enhance learning the job. The organization-stage finding was also forecasted. In preliminary interviews, DHs reported learning more by entering the job during operational periods and less during overhaul/maintenance.

Several relationships proposed in the development of the job-learning model were not investigated in this research. For example, the 18-month assignments were not long enough to study an issue such as the length of time required to achieve

automaticity in learning the job's technical role.

### CONCLUSIONS

The model presented in Figure 2 is a partial test of the proposed model of experientially-based job learning (Figure 1). The results support many of the relationships described in the model's formulation. The individual-differences, job/job-characteristics, context, and environmental factors all contributed to explaining the variance in the learning achieved on the job even though their measurement models were incomplete. The model shows promise and, to establish its validity and generalizability, should be subjected to further research involving other populations, jobs, contexts, and environments over a period in which automaticity can be achieved, i.e. three or more years (Gabarro, 1987). Introductory positions in aviation squadrons would be a good test of the model's generalizability to entry positions that emphasize technical skill more than managerial. Because of differences in structure and purpose, replication in industry is also required before the model can be accepted and used widely.

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Table 1. Measures of Constructs in the Job-Learning Model

A. Individual Differences

1. Background/demographics
  - a. Years of commissioned service.
  - b. Months in present job.
2. Personal characteristics (AOs)
  - a. Time taken to qualify in field.
  - b. Number of special qualifications earned.
  - c. Obtained the job I wanted.
  - d. Self-efficacy: job best suits my abilities.
3. Previous experience
  - a. Education/training: Training aided me to
    - 1'. Lead/manage personnel ( $\alpha = .84$ ).
    - 2'. Work with enlisted personnel.
    - 3'. Work with my superiors.
    - 4'. Work with other officers.
    - 5'. Do technical/administrative tasks.
  - b. Work
    - 1'. Had prior enlisted experience.
    - 2'. Had a shore assignment.
    - 3'. In the first of two DH jobs.
    - 4'. Acted as DH in prior assignment.
    - 5'. DH and most recent DO tasks alike.
    - 6'. DH and 2nd most recent DO tasks alike.
    - 7'. DH and 3rd most recent DO tasks alike.
    - 8'. Months in most recent DO job.
    - 9'. Months in 2nd most recent DO job.
    - 10'. Months in 3rd most recent DO job.

B. Job and Job-Characteristics

1. Job (DH): Weapons/operations/engineering/deck.



## 2. Job-characteristics

- a. Role ambiguity: Clarity of superior's wants.
- b. Role complexity: Equipment is high tech.
- c. Job challenge
  - 1'. Bored with job.
  - 2'. Job is difficult and pressured (@ = .71).
- d. Role overload (hours worked last week)
  - 1'. Total (@ = .50).
  - 2'. With peers and subordinates (@ = .84).
  - 3'. On professional development (quals).
- e. Job significance: Importance superiors place on:
  - 1'. "Mission" tasks (@ = .72).
  - 2'. Technical tasks (@ = .61).
  - 3'. Administration tasks (@ = .65).

## C. Context

- 1. Organization characteristics
  - a. Size (number of personnel).
  - b. Status.
  - c. Mission: Amphibious/combat support/combatant.
- 2. Organization climate/quality of people
  - a. Leadership climate (@ = .73).
  - b. Peers' competence is high.
  - c. Subordinates' competence is high.
- 3. Organization pace: Time for quals/job (@ = .74).
- 4. Organization stage
  - a. Entered job during operations.
  - b. Now doing repetitions/maintenance.
- 5. Quantity of resources available
  - a. Personnel as planned (@ = .79).

b. Reasonable funds available.

D. Environment

1. Social system/culture
  - a. Marital status affects learning.
  - b. Number of dependents.
2. Upper management and staff support
  - a. External contacts last week.
  - b. External contacts delegated.

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D. Environment

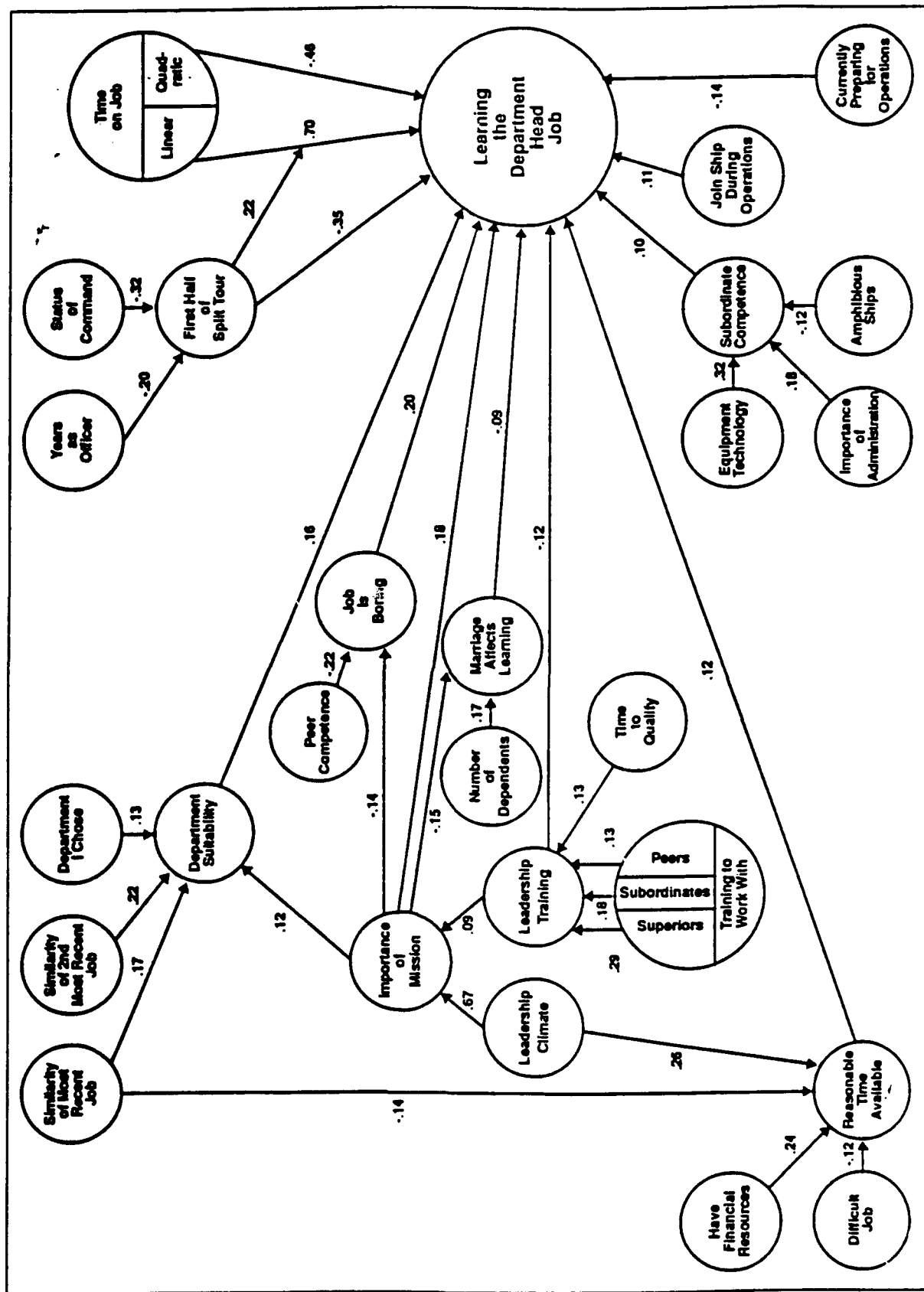
1. Social system/culture

- a. Marital status affects learning.
- b. Number of dependents.

2. Upper management and staff support

- a. External contacts last week.
- b. External contacts delegated.

Figure 2. Path Model of the Factors Influencing How Rapidly the Department Head Job is Learned.



**Figure 1. Job Learning Model**

